

I. REMARKS

In the Office Action mailed on February 26, 2007, the Examiner: (1) rejected claim 1 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,410,750 to Cantwell et al. (hereinafter "Cantwell") (Office Action, page 2); (2) rejected claims 4-7, 16-17, 26-27, and 29-32 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of published European Patent Application EP 1 102 425 by Mannermaa (hereinafter "Mannermaa") (Office Action, page 3); (3) rejected claim 8 under 35 U.S.C. § 103(a) as unpatentable over Cantwell in view of Mannermaa and further in view of U.S. Patent No. 5,983,160 to Horslund et al. (hereinafter "Horslund") (Office Action, page 5); (4) rejected claims 9-11 under 35 U.S.C. § 103(a) as unpatentable over Cantwell in view of Horslund (Office Action, page 6); (5) rejected claims 12-15, 18-25, 33, and 44 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of U.S. Patent No. 5,799,010 to Lomp et al. (hereinafter "Lomp") (Office Action, page 7); (6) rejected claims 36-42 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of Lomp and further in view of Mannermaa (Office Action, page 11); (7) rejected claim 28 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of "applicant admitted prior art" (Office Action, page 13); (8) rejected claim 43 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of Lomp and further in view of "applicant admitted prior art" (Office Action, page 14); and (9) objected to claims 2-3 and 34-35 as being dependent on a rejected base claim, but indicated that claims 2-3 and 34-35 "would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims" (Office Action, page 14). Applicant thanks the Examiner for indicating allowable subject matter. Applicant's responses to the Examiner's rejections and objections are set forth below.

A. Response to Examiner's Rejection of Claim 1 Under 35 U.S.C. § 102(b)

Applicant submits that the rejection is improper and should be withdrawn because Cantwell does not show or suggest each and every element of claim 1, individually or in combination, for at least the reasons set forth below.

Claim 1 recites, *inter alia*: (1) "calculating a statistical variance estimate (V) based on a plurality (K) of discriminator values (d_k) formed in a carrier tracking loop"; and (2) "calculating an RFI detector from the statistical variance estimate." In contrast to Applicant's claim 1, Cantwell describes a system that: (1) receives a signal containing interference; (2) converts the received signal from the time domain to the frequency domain; (3) estimates the interference in the frequency

domain; (4) converts the estimated interference into a time domain signal; and (5) subtracts the estimated interference from the originally received signal to remove the estimated interference from the received signal in the time domain. The cited sections of Cantwell provide a more detailed explanation of the Cantwell system described above, e.g.: (1) "receiv[ing] frequency domain I_{FIN} and Q_{FIN} sampled signals from the time to frequency converter" (Fig. 8A) and "generat[ing] I_M and Q_M which...are an estimate of [the in-phase and quadrature-phase components of the] interference in the frequency domain." (Cantwell col. 12, lines 39-45; Fig. 7); (2) feeding the I_M and Q_M estimates into a "phase rotator" where the "interference samples are phase rotated by Φ_K to account for the phase difference between the main path to the interference canceller 20 and passing through the interference detector 18" (Cantwell col. 12, lines 45-68; Fig. 7); and (3) "produc[ing] interference sample signals I_{FOUR} and Q_{FOUR} [from the phase rotated I_M and Q_M estimates] which are then converted back to the time domain" and fed into the interference canceller 20. (Cantwell col. 13, lines 8-10; Fig. 2) Applicant submits that Cantwell does not anticipate claim 1 for at least the reason that Cantwell's description of removing interference from a received signal does not show or suggest, individually or in combination, "calculating a statistical variance estimate (V) based on a plurality (K) of discriminator values (d_k)" and/or "calculating an RFI detector from the statistical variance estimate" as recited in Applicant's claim 1.

B. Response to Examiner's Rejection of Claims 4-7, 16-17, 26-27, and 29-32 Under 35 U.S.C. § 103(a)

Applicant submits the rejection of claims 4-7, 16-17, 26-27, and 29-32 under 35 U.S.C. § 103(a) is improper and should be withdrawn because the combination of Cantwell and Mannermaa does not show or suggest each and every element recited in the claims. First, claims 4-7, 16-17, 26-27, and 29-32 depend from claim 1 and Cantwell does show or suggest each and every element of claim 1 as set forth in Section IA, *supra*. Second, the addition of Mannermaa does not overcome the deficiency of Cantwell because, as the Examiner acknowledged, the "Applicant's arguments [that Mannermaa fails to teach the elements of claim 1]...filed on 11/22/2006 have been fully considered and are persuasive." (Office Action, page 2) In particular, the previously cited sections of Mannermaa describe using discriminator outputs as inputs for steering the local PRN reference code generated by the local code generator. (Mannermaa, page 5, lines 55-58) Nothing in the previously cited sections of Mannermaa shows or suggests the claimed step of "calculating an RFI detector from the statistical variance estimate." Moreover, Mannermaa does not even address the problem of

monitoring or detecting RFI in a satellite signal. Indeed, Mannermaa mentions RFI only once, stating that "[s]ignals from the GPS satellites are subject to electromagnetic interference..., the CDMA signal in a GPS receiver can be very weak and noisy... [and thus,] it is essential that the CDMA signals be tracked and locked at all times." (Mannermaa, page 2, lines 29-32) Mannermaa's statement that GPS signals are subject to interference does not teach Applicant's claimed step of "calculating an RFI detector from the statistical variance estimate." Therefore, the combination of Cantwell and Mannermaa does not show or suggest each and every element of claim 1, from which claims 4-7, 16-17, 26-27, and 29-32 depend.

C. Response to Examiner's Rejection of Claim 8 Under 35 U.S.C. § 103(a)

Applicant submits that the rejection of claim 8 under 35 U.S.C. § 103(a) is improper and should be withdrawn because the combination of Cantwell, Mannermaa, and Horslund does not show or suggest each and every element recited in the claim. First, claim 8 depends from claim 1 and the combination of Cantwell and Mannermaa does not show or suggest each and every element of claim 1 as set forth in Section IB, *supra*. Second, the addition of Horslund does not overcome the deficiency of Cantwell and Mannermaa because the Applicant has reviewed Horslund and finds nothing in Horslund to show or suggest "calculating a statistical variance estimate (V) based on a plurality (K) of discriminator values (d_k)" and/or "calculating an RFI detector from the statistical variance estimate" as recited in claim 1, from which claim 8 depends.

D. Response to Examiner's Rejection of Claims 9-11 Under 35 U.S.C. § 103(a)

Applicant submits that the rejection of claims 9-11 under 35 U.S.C. § 103(a) is improper and should be withdrawn because the combination of Cantwell and Horslund does not show or suggest each and every element recited in the claims. First, claims 9-11 depend from claim 1 and Cantwell does not show or suggest each and every element of claim 1 as set forth in Section IA, *supra*. Second, Applicant has reviewed Horslund and submits that the addition of Horslund does not overcome the deficiency of Cantwell because Applicant finds nothing in Horslund to show or suggest "calculating a statistical variance estimate (V) based on a plurality (K) of discriminator values (d_k)" and/or "calculating an RFI detector from the statistical variance estimate" as recited in claim 1, from which claims 9-11 depend.

E. Response to Examiner's Rejection of Claims 12-15, 18-25, 33, and 44 Under 35 U.S.C. § 103(a)

Applicant submits that the rejection of claims 12-15, 18-25, 33, and 44 under 35 U.S.C. § 103(a) is improper and should be withdrawn because the combination of Cantwell and Lomp does not show or suggest each and every element recited in the claims for at least the reasons set forth below.

1. Claims 12-15 and 18-25

First, claims 12-15 and 18-25 depend from claim 1 and Cantwell does not show or suggest each and every element of claim 1 as set forth in Section IA, *supra*. Second, Applicant has reviewed Lomp and submits that the addition of Lomp does not overcome the deficiency of Cantwell because Applicant finds nothing in Lomp to show or suggest "calculating a statistical variance estimate (V) based on a plurality (K) of discriminator values (d_k)" and/or "calculating an RFI detector from the statistical variance estimate" as recited in claim 1, from which claims 12-14 and 18-25 depend.

2. Claims 33 and 44

Claims 33 and 44 recite elements similar to those recited in claim 1. Therefore, for at least reasons similar to those set forth in Section IA, *supra*, Cantwell does not show or suggest: (1) "calculating a statistical variance estimate (V) for each satellite signal based on the plurality (K) of discriminator values d_k " and/or "calculating an RFI detector from the statistical variance estimate" as recited in claim 33; or (2) "a means for estimating a statistical various among a plurality of discriminator values..." or "means for detecting an RFI fault...", as recited in claim 44. Moreover, Applicant has reviewed Lomp and submits that the addition of Lomp does not overcome the deficiency of Cantwell because Applicant finds nothing in Lomp to show or suggest: (1) "calculating a statistical variance estimate (V) for each satellite signal based on the plurality (K) of discriminator values d_k " and/or "calculating an RFI detector from the statistical variance estimate" as recited in claim 33; or (2) "a means for estimating a statistical various among a plurality of discriminator values..." or "means for detecting an RFI fault...", as recited in claim 44.

F. Response to Examiner's Rejection of Claims 36-42 Under 35 U.S.C. § 103(a)

Applicant submits that the rejection of claims 36-42 under 35 U.S.C. § 103(a) is improper and should be withdrawn because the combination Cantwell, Lomp, and Mannermaa does not show or suggest each and every element recited in the claims, for at least the reasons set forth below.

First, claims 36-42 depend from claim 33 and the combination of Cantwell and Lomp does not show or suggest each and every element of claim 33 for at least the reasons set forth in Section IE-2, *supra*. Second, the addition of Mannermaa does not overcome the deficiencies of Cantwell and Lomp for reasoning similar to that set forth in Section IB, *supra*. In particular, the elements of claim 33 are similar to the elements of claim 1, and as the Examiner acknowledged, the "Applicant's arguments [that Mannermaa fails to teach the elements of claim 1]...filed on 11/22/2006 have been fully considered and are persuasive." (Office Action, page 2) Specially, the previously cited sections of Mannermaa describe using discriminator outputs as inputs for steering the local PRN reference code generated by the local code generator. (Mannermaa, page 5, lines 55-58) Nothing in the previously cited sections of Mannermaa shows or suggests the claimed step of "calculating an RFI detector from the statistical variance estimate." Moreover, Mannermaa does not even address the problem of monitoring or detecting RFI in a satellite signal. Indeed, Mannermaa mentions RFI only once, stating that "[s]ignals from the GPS satellites are subject to electromagnetic interference..., the CDMA signal in a GPS receiver can be very weak and noisy... [and thus,] it is essential that the CDMA signals be tracked and locked at all times." (Mannermaa, page 2, lines 29-32) Mannermaa's statement that GPS signals are subject to interference does not teach Applicant's claimed step of "calculating an RFI detector from the statistical variance estimate." Therefore, the combination of Cantwell, Lomp, and Mannermaa fails to show or suggest each and every element of claim 33, from which claims 36-42 depend.

G. Response to Examiner's Rejection of Claim 28 Under 35 U.S.C. § 103(a)

Applicant submits that the rejection of claim 28 under 35 U.S.C. § 103(a) is improper and should be withdrawn because the combination of Cantwell and "applicant admitted prior art" does not show or suggest each and every element of claim 28 for at least the reasons set forth below.

First, claim 28 depends from claim 1, and Cantwell does not show or suggest each and every element of claim 1 for at least the reasons set forth in Section I-A, *supra*. Second, Applicant has reviewed the cited "applicant admitted prior art" and submits that the passage stating "Satellite-based positioning systems, such as the Global Positioning System (GPS) and the Global Navigation System Satellite System (GLONASS), have gained a widespread use in many navigation applications" does not overcome the deficiency of Cantwell because the cited passage does not show or suggest "calculating a statistical variance estimate (V) based on a plurality (K) of discriminator values (d_k)"

and/or "calculating an RFI detector from the statistical variance estimate" as recited in claim 1, from which claim 28 depends.

H. Response to Examiner's Rejection of Claim 43 Under 35 U.S.C. § 103(a)

Applicant submits that the rejection of claim 43 under 35 U.S.C. § 103(a) is improper and should be withdrawn because the combination of Cantwell, Lomp, and "applicant admitted prior art" does not show or suggest each and every element of claim 43 for at least the reasons set forth below.

First, claim 43 depends from claim 33, and the combination of Cantwell and Lomp does not show or suggest each and every element of claim 33 for at least the reasons set forth in Section I-E-2, *supra*. Second, Applicant has reviewed the cited "applicant admitted prior art" and submits that the passage stating "[two] primary systems that are currently under development are Wide Area Augmentation System (WAAS)..., and Local Area Augmentation System (LAAS)..." does not overcome the deficiencies of Cantwell and Lomp because the cited passage does not show or suggest "calculating a statistical variance estimate (V) for each satellite signal based on the plurality (K) of discriminator values d_k " and/or "calculating an RFI detector from the statistical variance estimate" as recited in claim 33, from which claim 43 depends.

I. Response to Examiner's Objections to Claims 2-3 and 34-35

Applicant submits that the objection to claims 2-3 and 34-35 are improper and should be withdrawn for at least the reasons that: (1) claims 2-3 depend from claim 1, and claim 1 is allowable for the reasons set forth above; and (2) claims 34-35 depend from claim 33, and claim 33 is allowable for at least the reasons set forth above.

II. CONCLUSION

Applicant submits that the present application is in condition for allowance and notice to that effect is hereby requested. Should the Examiner feel that further dialog would advance the subject application to issuance, the Examiner is invited to telephone the undersigned at (312) 913-0001.

Respectfully submitted,
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